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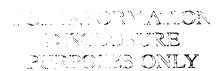
## WHAT IS CLAIMED IS:

1. A process for modifying a synthetic silica powder, the process comprising placing in a vacuum vessel a synthetic silica powder produced by a sol-gel process; heating the synthetic silica powder while evacuating the vacuum vessel; introducing into the vacuum vessel an atmosphere comprising helium;

heating the synthetic silica powder in the atmosphere comprising helium in the vacuum vessel to a heating temperature in a range of from a degas temperature of the synthetic silica powder to a sintering temperature of the synthetic silica powder; and,

after the heating, cooling the synthetic silica powder in the atmosphere comprising helium.

- 2. The process according to Claim 1, wherein the degas temperature is 700°C; the sintering temperature is 1400°C; and the synthetic silica powder is cooled in the atmosphere comprising helium to a temperature of 400°C or less.
- 3. The process according to Claim 1, wherein the heating temperature is in a range of from 800°C to 1200°C.
- 4. The process according to Claim 1, wherein the helium introduced into the vacuum vessel has a dew point of -50°C or less.
- 5. The process according to Claim 1, wherein the heating is at a pressure of 5 Pa or less.
  - 6. The process according to Claim 1, wherein the vacuum vessel is a vacuum furnace.
- 7. The process according to Claim 6, wherein the process further comprises evacuating the vacuum furnace to a pressure of 5 Pa or less.



Related r'ending Application
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- 8. The process according to Claim 6, wherein the process further comprises evacuating the vacuum furnace to a pressure of 5 Pa or less while the synthetic silica powder is maintained a temperature in a range of from the degas temperature to the sintering temperature.
  - 9. A modified synthetic silica powder produced by the process of Claim 1.
- 10. A crucible used for the production of single crystals, the crucible comprising a quartz glass layer forming an inside surface of the crucible, wherein

the quartz glass layer is produced by a process comprising fusing the modified synthetic silica powder of Claim 9.

- 11. The crucible according to Claim 10, wherein the quartz glass layer is transparent.
- 12. The crucible according to Claim 11, wherein the inside surface includes a bottom part and a side wall part; the quartz glass layer has a thickness of less than 0.5 mm; and a bubble content of the quartz glass layer before use is 0.1 volume % at the bottom part and 0.3 volume % at the side wall part.
- 13. The crucible according to Claim 11, wherein the inside surface includes a bottom part and a side wall part; the quartz glass layer has a thickness of less than 0.5 mm; and a bubble content of the quartz glass layer after use is 5 volume % at the bottom part and 10 volume % at the side wall part.

14. A process for modifying a synthetic silica powder, the process comprising providing an amorphous synthetic silica powder produced by a sol-gel process; heating the synthetic silica powder in a vacuum furnace to a heating temperature in a range of from 700°C to 1400°C;

maintaining the synthetic silica powder in the vacuum furnace in the range of from 700°C to 1400°C while evacuating the vacuum furnace to a pressure of 5 Pa or less; introducing into the vacuum furnace helium having a dew point of -50°C or less; cooling the synthetic silica powder in the helium in the vacuum furnace to 400°C or less to form a modified synthetic silica powder; and bringing the modified synthetic silica powder out of the vacuum furnace into air.

- 15. The process according to Claim 14, wherein the heating temperature is in a range of from 800°C to 1200°C.
  - 16. A modified synthetic silica powder produced by the process of Claim 14.
- 17. A crucible used for the production of single crystals, the crucible comprising a quartz glass layer forming an inside surface of the crucible, wherein

the quartz glass layer is produced by a process comprising fusing the modified synthetic silica powder of Claim 16.

- 18. The crucible according to Claim 17, wherein the quartz glass layer is transparent.
- 19. The crucible according to Claim 18, wherein the inside surface includes a bottom part and a side wall part; the quartz glass layer has a thickness of less than 0.5 mm; and a bubble content of the quartz glass layer before use is 0.1 volume % at the bottom part and 0.3 volume % at the side wall part.

20. The crucible according to Claim 18, wherein the inside surface includes a bottom part and a side wall part; the quartz glass layer has a thickness of less than 0.5 mm; and a bubble content of the quartz glass layer after use is 5 volume % at the bottom part and 10 volume % at the side wall part.